Review for Post Test

Year1 (2013-2014)

MULTIPLE CHOICE QUESTIONS

1. Write  as a power of x.

A. 

B. 

C. 

D. 

2. Write as a power of x.

A. 

B. 

C. 

D. 

3. Write  as a power of x.

A. 

B. 

C. 

D. 

4. Candy spends 1.5 hours crying before each matrix algebra quiz that she must take. She spent a total of 33 hours crying. How many matrix algebra quizzes did she take?

A. 2 quizzes

B. 11 quizzes

C. 22 quizzes

D. 44 quizzes

5. A car can get 40 miles per gallon of gas and drive 80 miles per hour. What is the rate it consumes gas in gallons per hour?

A. gallons per hour.

B. 2 gallons per hour.

C. 40 gallons per hour.

D. 80 gallons per hour.

6. The car described in #5 has a 10 gallon gas tank. For how many minutes can the owner drive before he runs out of gas?

A. 120 minutes

B. 300 minutes

C. 480 minutes

D. 600 minutes

7. Factor the expression 

A. 

B. 

C. 

D. 

8. Find all solution(s) to 

A. 

B. 

C. 

D. 

9. Find all solution(s) to 

A. 

B. 

C. 

D. 

10. Write the equation  in vertex form.

A. 

B. 

C. 

D. 

11. Consider the parabola whose equation is . Which of the following statements best describes the graph of this parabola?

A. the vertex is at 

B. the vertex is at 

C. the vertex is at 

D. the vertex is at 

12. Which of the following statements best describes the parabola in #11 above?

A. the maximum y value on the graph of the parabola is 

B. the minimum y value on the graph of the parabola is 

C. the maximum y value on the graph of the parabola is 

D. the minimum y value on the graph of the parabola is 

13. The intercepts of the line are:

A. 

B. 

C. 

D. 

14. Write  in slope intercept form.

A. 

B. 

C. 

D. 

15. The equation relates the number of points out of 200 that one of Mike's students will get on her combinatorics final (y) to the number of hours the student spends studying for the final (x). What is the average rate of change of Brett's score for each hour that he studies?

A. points per hour.

B. points per hour.

C. 15 points per hour.

D. 80 points per hour.

16. What statement correctly interprets the slope of the line described in #15?

A. If Brett studies one extra hour for the final, his score will be 15 points.

B. If Brett studies one extra hour for the final, his score will increase by 15 points.

C. If Brett studies one extra hour for the final, his score will be 80 points.

D. If Brett studies one extra hour for the final, his score will increase by 80 points.

17. If the equation relating the distance Mike has ridden on his bike, in miles (y) to the time he has ridden his bike, in minutes (x), is , which of the following statements most correctly describes both the number and units of Mike's average speed?

A. Mike's average speed is miles per minute.

B. Mike's average speed is minutes per mile.

C. Mike's average speed is 15 miles per minute.

D. Mike's average speed is 15 minutes per mile.

18. Consider the equation . What are the of this equation?

A. 

B. 

C. 

D. 

19. Consider the equation . What are the x-intercepts of this equation?

A. 

B. 

C. 

D. 

20. Which of the following statements best describes the parabola ?

A. The maximum y value occurs at 

B. The maximum y value occurs at 

C. The minimum y value occurs at 

D. the minimum y value occurs at 

21. After losing a game of truth or dare, Patricia is dared to jump off of a bridge 400 feet above the water, into the freezing cold Susquehanna River. Knowing that the truth alternative is more embarrassing, and preferring to bruise her bones over her ego in front of her friends, Patricia jumps. Her height, in feet above the water (y), is related to the time since she jumped, in seconds (x) is given by the equation . What is her average speed the first second that she falls?

A. 128 feet per second

B. 80 feet per second

C. 48 feet per second

D. 16 feet per second

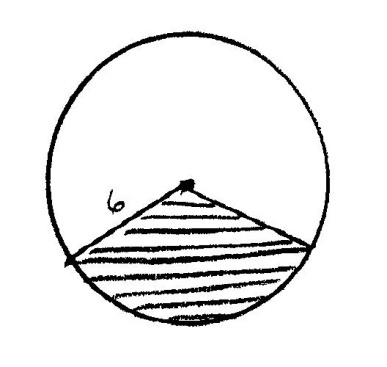
22. Referring to problem 21, what was Patricia's average speed for her whole trip downwards?

A. 16 feet per second

B. 48 feet per second

C. 32 feet per second

D. 80 feet per second



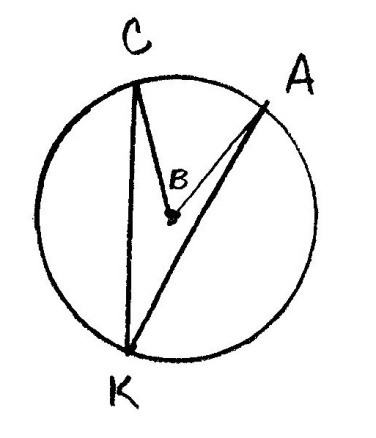
23. For the circle shown above, with radius 6 inches, and central angle of , calculate the area of the sector.

A. 

B. 

C. 

D. 



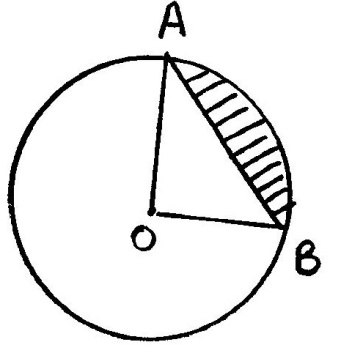
24. For the circle shown above, with center B, and , find the measure of .

A. 

B. 

C. 

D. 



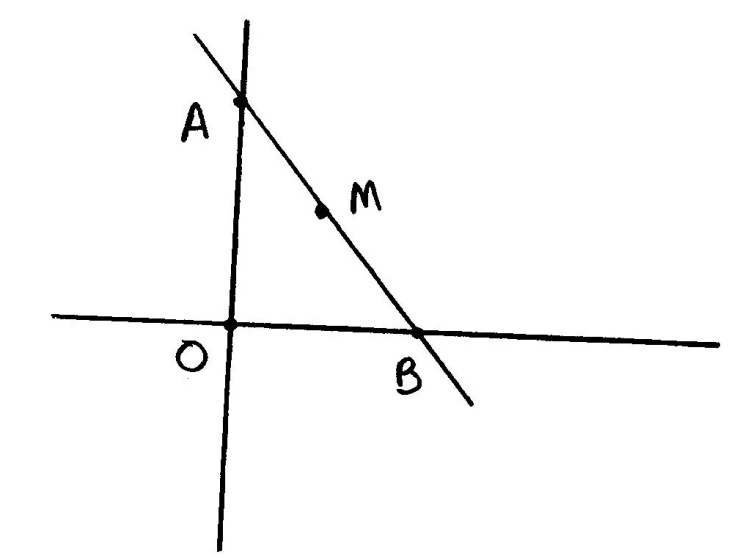
25. For the circle shown above, AB is a chord of the circle. The center of the circle is O, and the radius of the circle is 10 cm. . Calculate the shaded area to the nearest tenth of a centimeter. Use 3.14 for , or use the key on your calculator.

A. 28.5

B. 53.5

C. 78.5

D. 2.9

** Diagram not to scale**

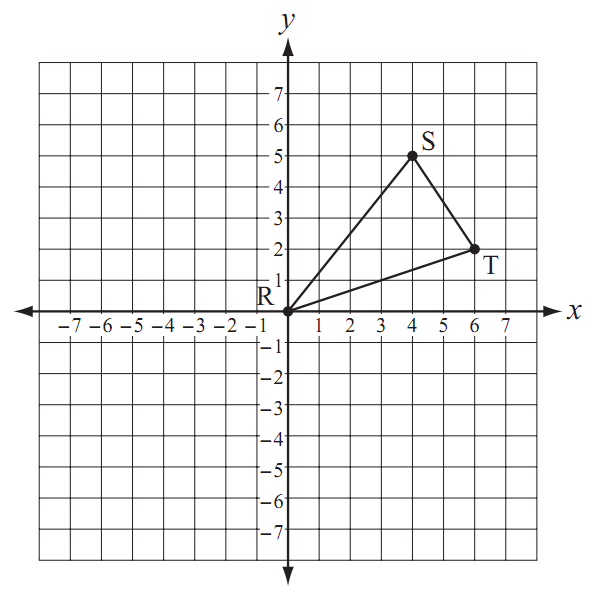
26. The drawing above shows the line with equation . Points A and B are the y- intercept and x-intercept of the line. M is the midpoint of . Determine the coordinates of M.

A. 

B. 

C. 

D. 

****

27. Find the perimeter of triangle RST, whose vertices are given in the drawing above.

A. 

B. 

C. 

D. 

28. Find the volume of a cone with radius 6 cm. and height 10 cm. Round your answer to the nearest tenth of a square cm. Use 3.14 for , or use the key on your calculator.

A. 125.6

B. 282.7

C. 377.0

D. 565.5



29. A solid plastic toy is made in the shape shown above (a cylinder which is joined to a hemisphere at both ends. The diameter of the toy at the joints is 5 cm. The length of the cylindrical part of the toy is 10 cm. Calculate the volume of plastic needed to make the toy. Round your answer to the nearest tenth of a square centimeter. Use 3.14 for , or use the key on your calculator.

A. 130.9

B. 261.8

C. 229.1

D. 850.8

3 cm

4 cm

5 cm

7 cm

30. Calculate the volume of the triangular prism shown above.

A. 70

B. 84

C. 42

D. 210

31. Tanya is wrapping gift boxes in beautiful wrapping paper. Each gift box is a rectangular prism. The larger of the two boxes has a length, width, and height that is four times as large as the corresponding measurements of the smaller box. Which statement below shows the relationship between the surface area of the gift boxes?

A. The larger gift box has a surface area that is 4 times as large as the smaller gift box.

B. The larger gift box has a surface area that is 8 times as large as the smaller gift box.

C. The larger gift box has a surface area that is16 times as large as the smaller gift box.

D. The larger gift box has a surface area that is 32 times as large as the smaller gift box.

32. Del is wrapping gift boxes in beautiful wrapping paper. Each gift box is a rectangular prism. The larger of the two boxes has a length, width, and height that is three times as large as the corresponding measurements of the smaller box. Which statement below shows the relationship between the volumes of the gift boxes?

A. The larger gift box has a volume that is 3 times as large as the smaller gift box.

B. The larger gift box has a volume that is 9 times as large as the smaller gift box.

C. The larger gift box has a volume that is 27 times as large as the smaller gift box.

D. The larger gift box has a volume that is 81 times as large as the smaller gift box.

33. Tired of mowing his yard, Dr. Ferster has bought a goat, which he has tied to the corner of a 3 by 6 foot shed, with an 8 foot rope. The goat is free to graze on all of the luscious grass that he can reach. Calculate the area of the yard on which the goat can graze. Round your answer to the nearest square foot. Use 3.14 for , or use the key on your calculator.

A. 150.8

B. 241.9

C. 157.3

D. 173.6



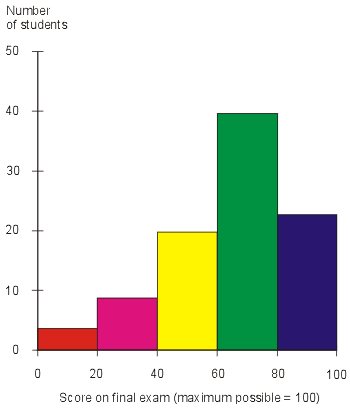
34. Choose the correct statement for the histogram shown above.

A. Only 2 people prefer to pay $19.01 to $24 for lunch.

B. People like to eat lunch out.

C. 5 people pay $9.01-$14 for lunch.

D. 1 person pays more than $19 for lunch.



35. Choose the correct statement for the histogram shown above.

A. More students scored between 80-100 than between 20-40.

B. Most students scored between 0 and 20 on the exam.

C. Del Scored a 75% on the test.

D. Most students studied for the exam.

90 100 110 120 130 140

36. Which statement is true for the box plots indicated above?

A. They both have the same median.

B. They both have the same low score.

C. The majority of scores in the top box plot were higher than the scores in the bottom box plot.

D. They both have the same mean.

Questions 37-39 refer to the following table, which shows the number of high school students taking an AP class in a subject, based on grade level.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Math | English | World Language | Row totals |
| Senior | 70 | 80 | 70 | 220 |
| Junior | 150 | 60 | 35 | 245 |
| Sophomore | 180 | 30 | 15 | 225 |
| Column Totals | 400 | 170 | 120 | 690 |

37. What percentage of students are taking English?

A. 57.97%

B. 24.64%

C. 30.43%

D. 88.4%

38. What percentage of the juniors are taking World Language?

A. 5.07%

B. 17.39%

C. 52.89%

D. 14.29%

39 What percentage of those who are taking World Language are sophomores?

A. 58.33%

B. 12.5%

C. 2.17%

D. 6.67%

Questions 40-42 refer to the following set of data related to average number of minutes per day that children of age 5 spend with each parent, relative to the country in which the family lives.

|  |  |  |  |
| --- | --- | --- | --- |
| Time spent with DAD | | Time spent with MOM | |
| Country | Minutes per Day | Country | Minutes per Day |
| Belgium | 30 | Belgium | 280 |
| Canada | 44 | Canada | 240 |
| China | 54 | China | 220 |
| Finland | 50 | Finland | 295 |
| Germany | 36 | Germany | 300 |
| Belgium | 30 | Belgium | 350 |

40. Calculate the mean time spent with dad?

A. 244

B. 40.67

C. 24

D. 48.8

41. Calculate the mean time spent with mom?

A. 40.67

B. 337

C. 1685

D. 280.83

42. Which statement most accurately compares the spread of the amount of time spent with dad compared to the amount of time spent with mom?

A. The range is a larger number for moms than for dads.

B. The range is a larger number for dads than for moms.

C. The range for dads is equal to the range for moms.

D. Both range values are negative.

43. A population has a mean of 40 and a standard deviation of 10. Find the z-score for a raw score of 55.

A. 1.5

B. 3.0

C. -1.5

D. 1.13

44. A population has a mean of 50 and a standard deviation of 10. Find the raw score for a

z-score of 1.2.

A. 56

B. 38

C. 50

D. 62

FREE RESPONSE QUESTIONS

1. Simplify fully:. Your final answer should be in the form where a, b, and c are real numbers.

2. John, who is a fisherman, spends 120 days each summer fishing. Each day he is able to empty 8 lobster traps. On average, each lobster trap contains 6 lobsters. He makes $5 for each lobster that he catches.

A. About how much profit does John make each summer that he spends fishing?

B. For how many summers would he have to fish before he could buy a cabin in the woods that costs $115,200?

3. Consider the line going through the points and .

A. Graph the line.

B. Find the slope of the line.

C. Find the equation of the line. Put your answer in slope-intercept form. ()

D. Find the y intercept(s) of the line.

E. Find the x intercept(s) of the line.

4. Put the equation  into vertex form by completing the square.

5. Consider the parabola given by the equation , or equivalently, .

A. What is the y intercept of this parabola?

B. What are the x intercepts of this parabola?

C. What is the vertex of this parabola?

D. Sketch the graph of this parabola.

6. Tracy wants to visit Amy for her birthday. She decides to walk to the Corner Store and then pass Abby’s Book Store on the way in order to purchase a present. Coming home she will take the shortcut through the park and past the pond.



A. If each unit on the grid represents one block, how many blocks will she walk going to Amy’s?

B. Again, assuming that each unit on the grid represents one block, how many blocks will she walk going home?

C. Explain how you computed the distance for both trips – coming and going.

D. As Tracy is walking home through the field, she stops to dangle her feet in the pond that is exactly half way between Amy and Tracy’s house. Give the coordinates of the pond.

7. Ice cream is sold in stores in cylindrical containers. The containers are 20 cm high with a radius of 12 cm.

A. Determine how much ice cream is in each container.

B. Each scoop of ice cream is a sphere of diameter 4 cm. Determine how much ice cream is in each scoop.

C. How many scoops are in each container?

D. If one scoop sells for $3.20, how much money will the ice cream store make for each full container of ice cream that it sells in cones?

8. Tessa wants to make a spiffy case to hold her records (yes, vinyl's making a comeback). She decides that the bottom of the box needs to be made from heavy grade plywood that she can buy at a cost of $.20 per square inch. The sides of the case can be made from a different material that Tessa will choose to reflect her eclectic tastes in design. Let's say that this material will cost $.10 per square inch. Tessa determines that the base of her case must be a square that measures 12 inches per side. She decides that the sides of the case must be 18 inches high. Tessa will not put a lid on her case.

A. Determine the area of the bottom of her case.

B. Determine the area of each side of her case.

C. Determine the surface area of her case.

D. Determine the volume of her case.

E. Use the prices in the problem to determine the cost of the materials needed to make the case.

9. A class of pupils played a computer game that tested how quickly they reacted to an instruction to press a particular key. The computer measured their reaction times in tenths of a second. The table below shows the results obtained for the reaction time for each pupil for both boys and girls.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Median | Lower Quartile | Upper Quartile | Minimum | Maximum |
| Girls | 10 | 8 | 15 | 6 | 19 |
| Boys | 10 | 7 | 13 | 4 | 16 |

A. Draw two box plots to compare the reaction times of boys and girls.

B. Write a brief comparison of the performance of boys and girls in this game.

10. The frequency distribution below shows the yearly income distribution of a sample of 160 Polk County residents.

|  |  |
| --- | --- |
| Yearly Income |  |
| (in thousands of dollars) | Frequency |
|  |  |
| 10 - 14 | 10 |
| 15 - 19 | 25 |
| 20 - 24 | 30 |
| 25 - 29 | 40 |
| 30 - 34 | 35 |
| 35 - 39 | 20 |
| Total | 160 |

A. What percentage of the individuals in the sample had incomes of less than $20,000?

B. How many individuals had incomes of at least $25,000?

11 Question 11 relates to the information given in the table below, regarding Bob's test results on his last 3 exams.

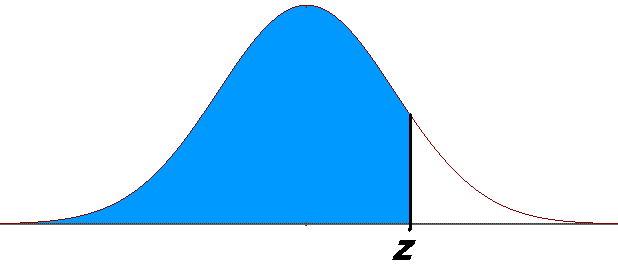
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Bob's test  Score | Mean | Standard Deviation | Z-Score |
| English | 75 | 72 | 5 |  |
| Science | 94 | 90 | 3 |  |
| History | 70 | 55 | 10 |  |

A. Complete the table by calculating Bob's z-score for each subject. Show your work below.

B. Relative to his classmates, on which exam did Bob perform best?

C. Using the portion of the z chart on the next page, determine the percent of the students in Bob's science class who scored lower than he did.

D. Using the portion of the z chart that follows, determine the percentage of the students in Bob's English class who scored higher than he did.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Z** | **.00** | **0.01** | **0.02** | **0.03** | **0.04** | **0.05** |
| **0.0** | 0.5 | 0.504 | 0.508 | 0.512 | 0.516 | 0.5199 |
| **0.1** | 0.5398 | 0.5438 | 0.5478 | 0.5517 | 0.5557 | 0.5596 |
| **0.2** | 0.5793 | 0.5832 | 0.5871 | 0.591 | 0.5948 | 0.5987 |
| **0.3** | 0.6179 | 0.6217 | 0.6255 | 0.6293 | 0.6331 | 0.6368 |
| **0.4** | 0.6554 | 0.6591 | 0.6628 | 0.6664 | 0.67 | 0.6736 |
| **0.5** | 0.6915 | 0.695 | 0.6985 | 0.7019 | 0.7054 | 0.7088 |
| **0.6** | 0.7257 | 0.7291 | 0.7324 | 0.7357 | 0.7389 | 0.7422 |
| **0.7** | 0.758 | 0.7611 | 0.7642 | 0.7673 | 0.7704 | 0.7734 |
| **0.8** | 0.7881 | 0.791 | 0.7939 | 0.7967 | 0.7995 | 0.8023 |
| **0.9** | 0.8159 | 0.8186 | 0.8212 | 0.8238 | 0.8264 | 0.8289 |
| **1.0** | 0.8413 | 0.8438 | 0.8461 | 0.8485 | 0.8508 | 0.8531 |
| **1.1** | 0.8643 | 0.8665 | 0.8686 | 0.8708 | 0.8729 | 0.8749 |
| **1.2** | 0.8849 | 0.8869 | 0.8888 | 0.8907 | 0.8925 | 0.8944 |
| **1.3** | 0.9032 | 0.9049 | 0.9066 | 0.9082 | 0.9099 | 0.9115 |
| **1.4** | 0.9192 | 0.9207 | 0.9222 | 0.9236 | 0.9251 | 0.9265 |
| **1.5** | 0.9332 | 0.9345 | 0.9357 | 0.937 | 0.9382 | 0.9394 |
| **1.6** | 0.9452 | 0.9463 | 0.9474 | 0.9484 | 0.9495 | 0.9505 |